

The Engineering of Budj Bim

Engineering Heritage Australia has recognised the National Heritage listed Budj Bim National Heritage Landscape, created by the Gunditjmara engineers, as an Engineering Heritage National Landmark with a ceremony in October 2011. The works join others such as the Sydney Harbour Bridge and the Snowy Mountains Scheme as being of engineering heritage significance at a national level.

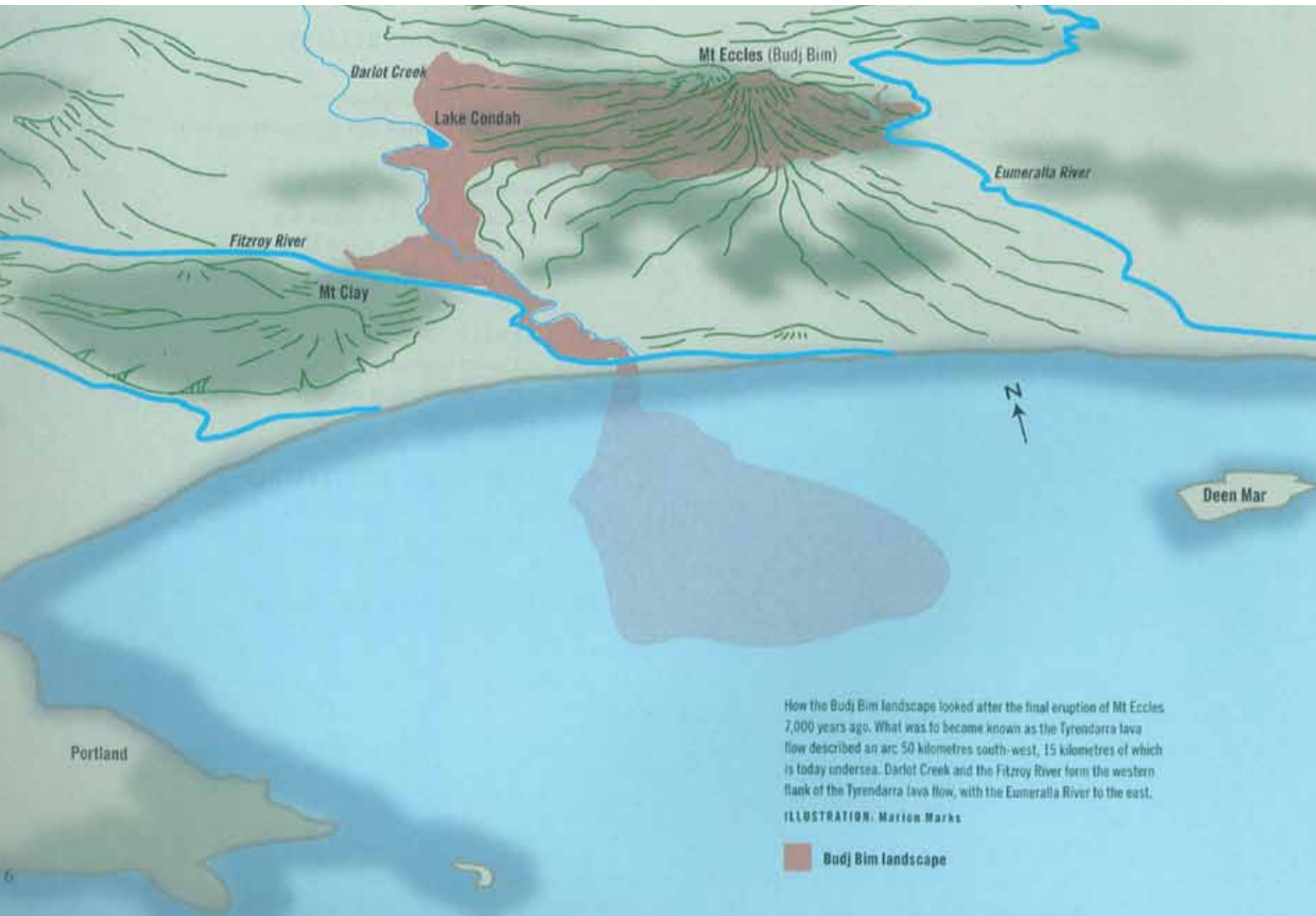


Illustration by Marion Marks from "The People of Budj Bim". Em Press, 2010. Used with thanks.

Budj Bim Landscape

Eruptions of the volcano at Mt Eccles last took place about 30,000 years ago. The lava diverted the water courses, creating Lake Condah and Condah Swamp, and provided an ideal resource for building and engineering structures.

The traditionally engineered aquaculture of the Budj Bim landscape extends throughout the Mt Eccles lava flow and its wetlands. The Gunditjmara engineers developed and managed the hydraulics required to farm and harvest kooyang (short-finned eel) and other fish.

Archaeological research is continuing, but present estimates suggest that the first structures date from 6600 years ago and were in use until the 19th century.

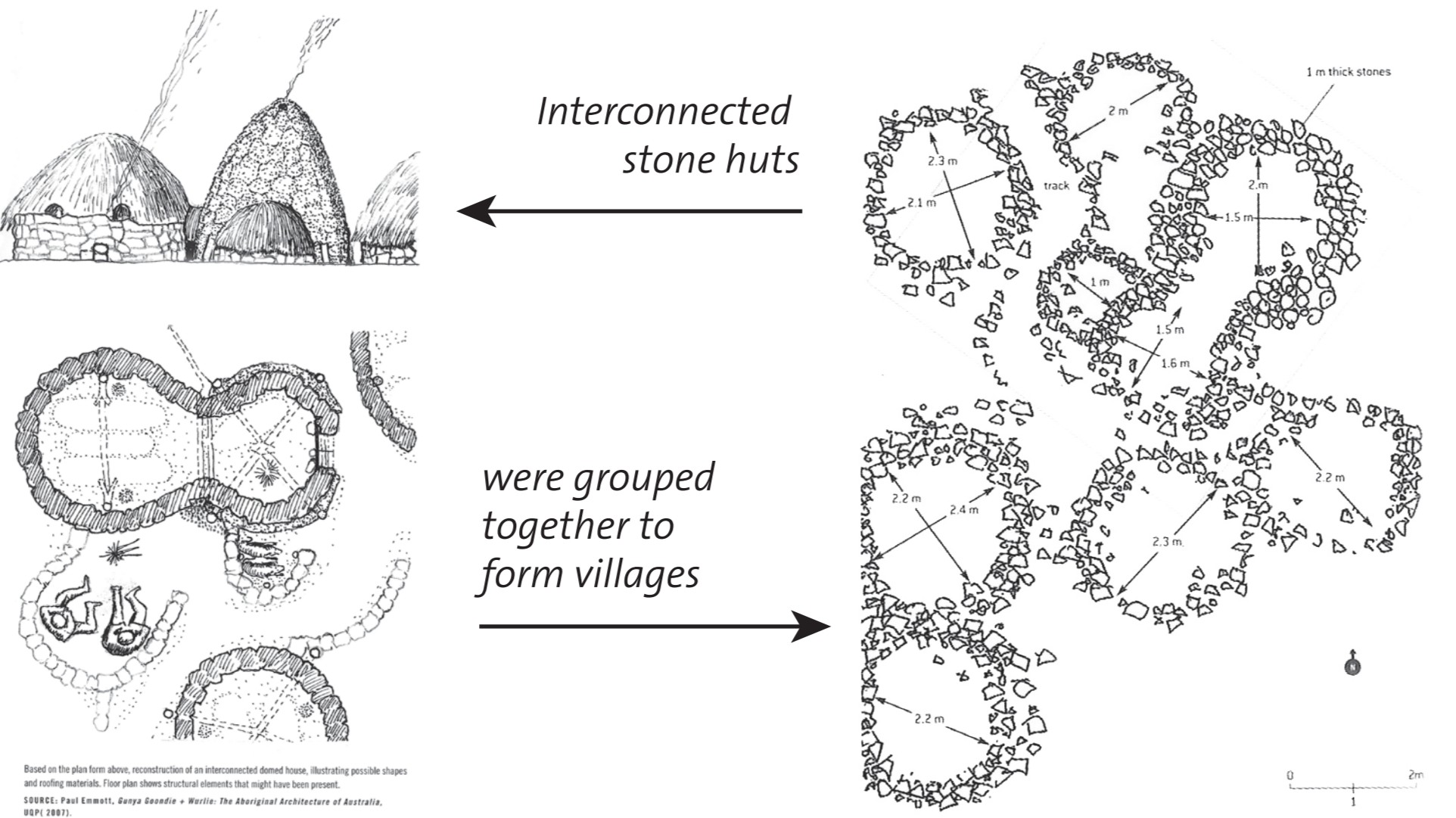
"...The Gunditjmara engineers developed and managed the hydraulics required to farm and harvest kooyang (short-finned eel) and other fish..."

Engineering Leads to a Stronger Society

The work made possible by the Budj Bim landscape is a unique Australian example of the link from engineering through permanent food supply to cultural change.

The permanent food supply led to a settled society in villages of stone huts, some interlinked for families, the development of a trading economy and the establishment of higher levels of governance through the hereditary succession of chiefs.

Recent archaeological investigations have shown how the channels, ponds and fish trap weir structures were developed continually to account for changing water levels with the seasons and longer term climate changes.



Graphics by Paul Memmott, "The Aboriginal Architecture of Australia", QUP 2001. Used by permission of author.

Australia's First Works of Civil Engineering?

For the first charter of the Institution of Civil Engineers in 1828, Thomas Tredgold provided the definition "...the profession of a civil engineer, being the art of directing the great sources of power in nature for the use and convenience of man." Nowhere is this better exemplified early in human history than at these sites.

Stone channels, weirs, traps and ponds were constructed from the readily available basalt stone from the Mt Eccles lava flow.

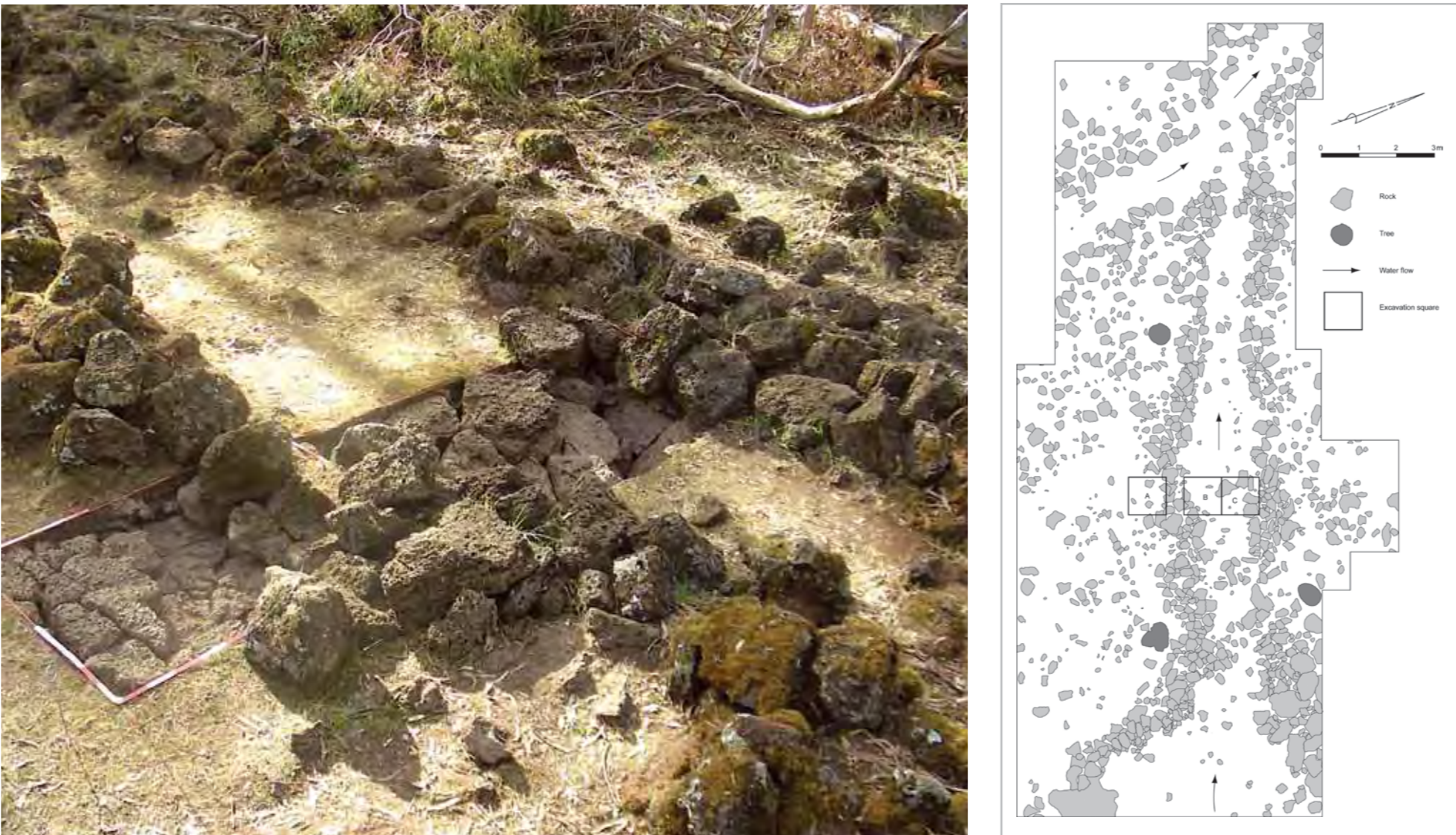
The stone infrastructure was activated by the fluctuating height of the water moving in and out through the aquaculture systems at different levels.

Gunditjmara people would herd and move the kooyang and other fish through the systems for storing in ponds or harvesting the kooyang through the stone traps and into woven baskets.

The benefit of a stable climate and intimate knowledge of the Budj Bim landscape enabled the Gunditjmara clans to live and work alongside their aquaculture systems for thousands of years.

The traditional practice of engineering the infrastructure to maintain its integrity and purpose requires a continuing knowledge of climate, hydraulics and the Budj Bim landscape.

Illustrations from Archaeological report by Ian McNiven, Monash University, 2009



2008 archaeological dig starts to reveal further the complex system of channels

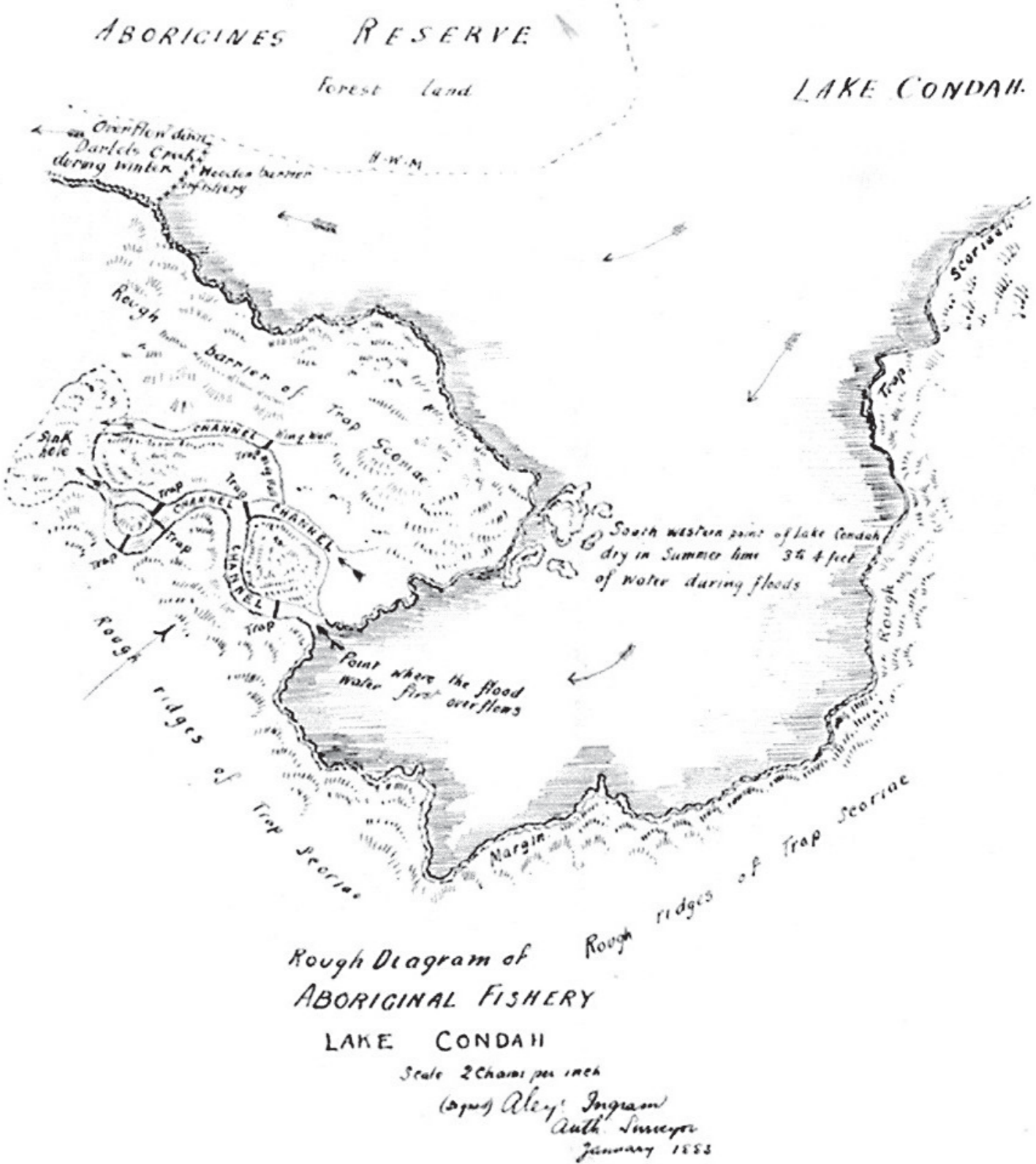
Secret of the Wetlands

'...this is a work of undoubted antiquity, but to what remote period of time it owes its origin no one will ever know. It stands as a dateless monument of incredible labor visible through the volcanic debris discharged from Mount Eccles and Napier, and the work and its design were worthy of their builders'.

- Thomas Worsnop, The Prehistoric Arts, Manufactures, Works, Weapons, etc. of the Aborigines of Australia, 1897.

Alexander Ingram (1841 – 1913) was the Surveyor who supervised the first major drainage works of the Condah Swamp and Lake Condah starting in 1887. Ingram had visited and documented the traditional aquaculture systems during the last part of the 19th century.

The Surveyor had sought information on the hydraulics of the engineered landscape from Gunditjmara people still living along the swamp and lake. Thomas White (ca. 1832 – 1892) of the Gunditjmara lived and died at "Allumyung" on the Louth Swamp arm of Condah Swamp and provided Ingram with intimate knowledge of the aquaculture.



Part of Alexander Ingram's 1893 plan of one channel and trap system (map from South Australia Museum)



GUNDITJMARA
Traditional Owners
Aboriginal Corporation



Lake Condah
Sustainable Development Project



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